

## PATENT ABSTRACTS OF JAPAN

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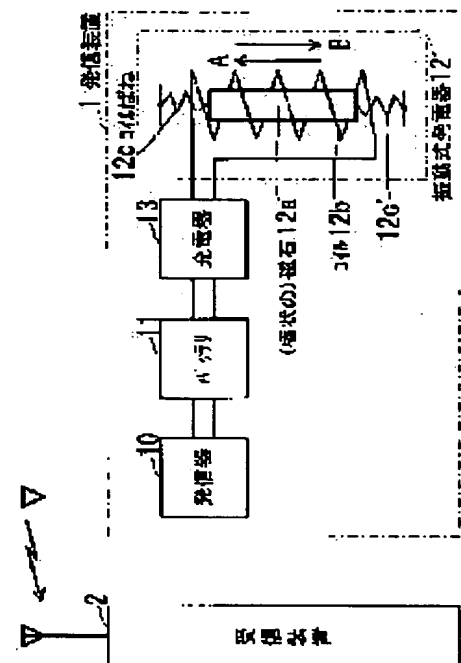
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## (54) DETECTION DEVICE FOR PATIENT OR THE LIKE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To prevent the drop of the potential of a battery that constitutes an transmission device which is installed on a roaming patient or the like and transmits the present position to a reception device and the like, and to continuously operate the transmission device for a long time.

**SOLUTION:** In the stationary state in which a roaming patient on whom a transmission device 1 having a generator 10 transmitting the present position and the like to a reception device 2 is installed, a DC voltage which is previously accumulated in a battery 11 is used as the operation power of the transmitter. A current (different direction current) generated by a vibration generator 12 is charged in the battery as a DC voltage by vibration with the movement of the roaming patient. Thus, the potential drop of the battery feeding the operating power to the transmitter in the moving state of the roaming patient is prevented and the transmission device can continuously be operated for a long time.



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**CLAIMS**

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[Claim(s)]

[Claim 1] It has the sender (1) which has the transmitter (10) with which a wandering patient etc. is equipped, and which sends the current position etc. to a receiving set (2). Said sender Detection equipments, such as a patient characterized by having the dc-battery (11) which supplies a power source to said transmitter, the oscillating-type electric organ (12) generated by the vibration accompanying a wandering patient's etc. migration, and the battery charger (13) which charges said dc-battery with the current supplied by said oscillating-type electric organ.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to detection equipments, such as a patient, especially prevents the potential fall of a dc-battery which makes the sender with which a wandering patient etc. is equipped, and which sends the current position etc. to a receiving set, and relates to detection equipments, such as a patient who can operate a sender continuously for a long time.

[0002]

[Description of the Prior Art] From the former, detection equipments, such as a patient of a configuration of being shown in the block diagram of drawing 2 as equipment who detects a wandering patient's etc. current position etc. in a hospital etc., are proposed.

[0003] Detection equipments, such as the patient who shows in this drawing, consist of a sender 51 which consists of a transmitter 60 with which a wandering patient etc. is equipped, and which sends the current position of the wandering patient concerned etc. (the current position etc. is called hereafter), and a dc-battery 61 with which it stores electricity direct current voltage beforehand as a power source of the transmitter concerned of operation, and a receiving set 52 which receives the current position which be installed in the entrance of a sickroom etc. and be sent from the transmitter 60 of a sender 51, and carries out signal processing suitably.

[0004] In addition, the pocket mold transmitter and receiver which were indicated by JP,10-224240,A etc. shall be used for the transmitter 60 and receiving set 52 of a sender 51, and the configuration, actuation, etc. explain therefore omit.

[0005] In detection equipments, such as such a patient, there is a limitation in the amount (the amount of accumulation of electricity) of the direct current voltage which the dc-battery 61 of a sender 51 stores electricity, when migration of long duration is needed for the wandering patient putting on a sender 51 etc., it originates in electric supply of the long duration from a dc-battery 61 to a transmitter 60, the potential of the dc-battery concerned falls, and storing electricity becomes insufficient. Thereby, in the migration place, the wandering patient etc. had the difficulty which cannot send the current position etc. to a receiving set 52 from the transmitter 60 of a sender 51. Moreover, or it used a dc-battery 61 as a removable dc-battery and exchanged the dc-battery concerned with the fall of potential, the dc-battery 61 and the commercial alternating current power source were connected with the proper means, it was indispensable to have charged the potential (direct current voltage) of an accumulation-of-electricity insufficiency by electric supply from the commercial alternating current power source concerned, and in order to cancel this difficulty and to operate the transmitter 60 of a sender 51 continuously for a long time, when it was any, there was a difficulty that cost increases with great power consumption.

[0006] The potential fall of a dc-battery which was made in order that this invention might cancel an above-mentioned difficulty, and makes the sender with which a wandering patient etc. is equipped, and which sends the current position etc. to a receiving set is prevented, and it aims at offering detection equipments, such as a patient who can operate a sender continuously for a long time.

[0007]

[Means for Solving the Problem] It has the sender which has the transmitter which a wandering patient etc. is equipped with detection equipments, such as a patient by this invention, and sends the current position etc. to a receiving set in order to attain such a purpose, and a sender is equipped with the dc-battery

which supplies a power source to a transmitter, the oscillating-type electric organ generated by the vibration accompanying a wandering patient's etc. migration, and the battery charger which charges a dc-battery with the current supplied by the oscillating-type electric organ.

[0008] According to the detection equipments, such as such a patient, the direct current voltage with which the power source of a transmitter of operation stored electricity beforehand the wandering patient by whom the sender which has the transmitter which sends the current position etc. to a receiving set was carried in the quiescent state at the dc-battery is used. Moreover, since the current (the different direction current) generated from an oscillating-type electric organ by the vibration accompanying a wandering patient's etc. migration is charged by the dc-battery as direct current voltage through a battery charger, the potential fall of the dc-battery with which a wandering patient etc. supplies electric power to a transmitter in a power source of operation in a migration condition is prevented, and can operate a sender continuously for a long time.

[0009]

[The gestalt of the actual condition of invention] Hereafter, one example of the desirable gestalt which applied detection equipments, such as a patient by this invention, is explained with reference to a drawing.

[0010] Drawing 1 is the block diagram showing the configuration of one example of detection equipments, such as a patient by this invention, and consists of receiving sets 2 which receive (the current position etc. is called hereafter) and carry out signal processing of the current position of the wandering patient sent from the transmitter 10 of the sender 1 with which a wandering patient etc. is equipped, and the sender 1 which it is installed in the entrance of a sickroom etc. and is mentioned later etc. suitably.

[0011] The sender 1 is equipped with the transmitter 10 which sends the current position etc., the dc-battery 11 with which it stores electricity direct current voltage beforehand as a power source of a transmitter 10 of operation, the oscillating-type electric organ 12 which vibrates with a wandering patient's etc. migration and generates a current (the different direction current) by electromagnetic induction, and the battery charger 13 which charges direct current voltage at a dc-battery 11 according to the current supplied from the oscillating-type electric organ 12.

[0012] The oscillating-type electric organ 12 of a sender 1 is equipped with rod-like magnet 12a to which N pole which shows a polarity in the direction of a major axis, and the south pole (not shown) were assigned, coil 12b in which magnet 12a was arranged at the inner circumference side wound around tubed, and coiled spring 12c which supports magnet 12a in the direction of a major axis and 12c'. In addition, the other end of coiled spring 12c by which the end was connected to the direction both ends of a major axis of magnet 12a, and 12c' is being fixed by the proper means, respectively.

[0013] The diode bridge which carries out full wave rectification of the different direction current generated in coil 12b by both-way migration of the direction A and B of a major axis of magnet 12a accompanying telescopic motion of coiled-spring 12c which makes the oscillating-type electric organ 12, and 12c', i.e., the migration directions, to the battery charger 13 of a sender 1, the capacitor which graduate the current by which full wave rectification was carried out, and the direct current voltage for charging the graduated current at a dc-battery 11 are equipped with the DC converter which carries out AC/DC conversion (not shown).

[0014] In addition, the pocket mold transmitter and receiver which were indicated by JP,10-224240,A etc. like the conventional example shall be used for the transmitter 10 and receiving set 2 of a sender 1, and the configuration, actuation, etc. explain therefore omit.

[0015] Thus, in detection equipments, such as a constituted patient, the actuation is explained hereafter.

[0016] The direct current voltage which the dc-battery 11 stored electricity beforehand is used for the power source of the transmitter 10 with which the wandering patient putting on a sender 1 etc. sends the current position etc. to a receiving set 2 in a quiescent state of operation.

[0017] Next, coiled spring 12c to which the wandering patient putting on a sender 1 etc. forms the oscillating-type electric organ 12 in a migration condition, and 12c' are expanded and contracted in proportion to the amount of vibration accompanying a wandering patient's etc. migration, and magnet 12a reciprocates in the direction A and B of a major axis, i.e., the migration directions. At this time, electromotive force is guided in the direction which bars change of the magnetic flux which pierces through the coil concerned with the reciprocating motion of magnet 12a by coil 12b (electromagnetic induction), and the different direction current occurs in it. In addition, the current value concerned of this different direction current changes with differences of not only momentum, the above-mentioned the direction A

and B of a major axis, i.e., migration directions, of magnet 12a, but the number-of-turns value of coil 12b. [0018] Full wave rectification is carried out in the diode bridge which forms a battery charger 13, AC/DC conversion is carried out by DC converter at direct current voltage as a current graduated by the capacitor, and the different direction current generated in coil 12b which makes the oscillating-type electric organ 12 is charged by the dc-battery 11. Since a wandering patient etc. becomes the power source of the transmitter 10 in a migration condition of operation, this direct current voltage can hold the electric supply condition to a transmitter 10, without the potential of a dc-battery 11 falling, also when prolonged migration is needed for the wandering patient putting on a sender 1 etc., and can operate a sender 1 continuously for a long time.

[0019]

[Effect of the Invention] Since the wandering patient by whom the sender which has the transmitter which sends the current position etc. to a receiving set was carried can prevent the potential fall of the dc-battery which supplies electric power to a transmitter in a power source of operation in a migration condition according to the detection equipments, such as a patient of this invention, so that clearly from the above explanation, a sender can be operated continuously for a long time.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the configuration of one example of detection equipments, such as a patient by this invention.

[Drawing 2] The block diagram showing the configuration of detection equipments, such as the conventional patient.

[Description of Notations]

1 ..... Sender

2 ..... Receiving set

10 ..... Transmitter

11 ..... Dc-battery

12 ..... Oscillating-type electric organ

13 ..... Battery charger

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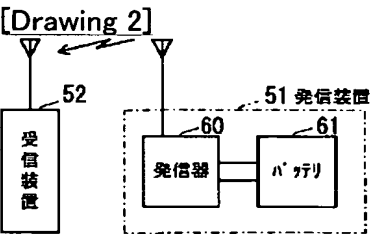
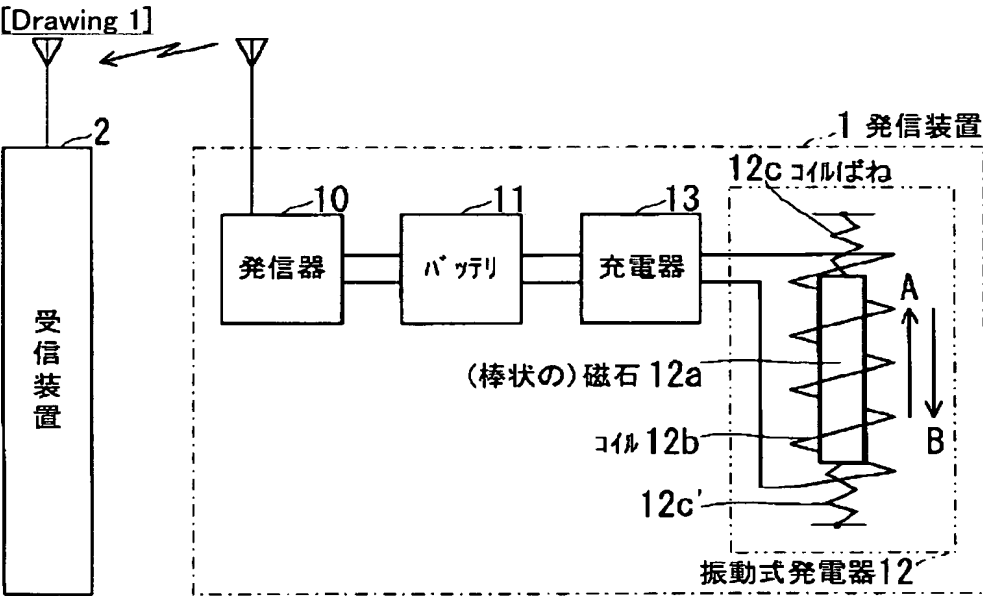
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DRAWINGS



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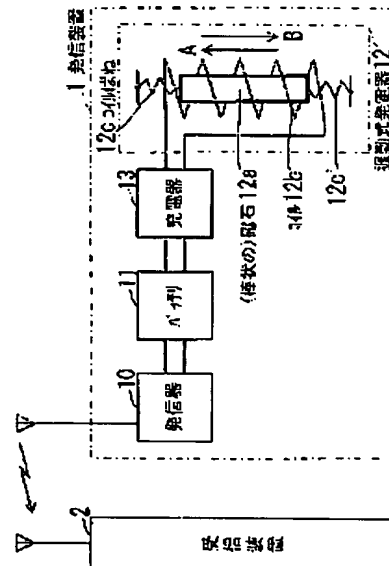
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(54) 【発明の名称】 患者等の検出装置

(57) 【要約】

【課題】 徘徊患者等に装着され現在位置等を受信装置に発信する発信装置をなすバッテリーの電位低下を防止し、発信装置を長時間連続して動作させる。

【解決手段】 現在位置等を受信装置2に発信する発信器10を有する発信装置1が装着された徘徊患者等が静止状態において、発信器の動作電源にはバッテリー11に予め蓄電された直流電圧が用いられる。また、徘徊患者等の移動に伴う振動で振動式発電器12から発電される電流(異方向電流)は、充電器13を介した直流電圧としてバッテリーに充電されることから、徘徊患者等が移動状態において発信器に動作電源を給電するバッテリーの電位低下は防止され、発信装置を長時間連続して動作させることができる。



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【特許請求の範囲】

【請求項1】徘徊患者等に装着され現在位置等を受信装置(2)に発信する発信器(10)を有する発信装置(1)を備え、

前記発信装置は、前記発信器に電源を供給するバッテリー(11)と、徘徊患者等の移動に伴う振動で発電される振動式発電器(12)と、前記振動式発電器により供給される電流で前記バッテリーを充電する充電器(13)とを備えたことを特徴とする患者等の検出装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は患者等の検出装置に係り、特に徘徊患者等に装着され現在位置等を発信装置に発信する発信装置をなすバッテリーの電位低下を防止し、発信装置を長時間連続して動作させることができる患者等の検出装置に関する。

【0002】

【従来の技術および発明が解決しようとする課題】従来から、病院等において徘徊患者等の現在位置等を検出する装置として、図2のブロック図に示す構成の患者等の検出装置が提案されている。

【0003】同図に示す患者等の検出装置は、徘徊患者等に装着され当該徘徊患者等の現在位置等(以下、現在位置等と称す)を発信する発信器60、当該発信器の動作電源として予め直流電圧が蓄電されているバッテリー61からなる発信装置51と、病室の出入口等に設置され発信装置51の発信器60から発信される現在位置等を受信し適宜に信号処理する受信装置52とで構成されている。

【0004】尚、発信装置51の発信器60および受信装置52には、特開平10-224240号公報等に開示された携帯型発信機、受信機が用いられているものとし、その構成および動作等の説明については省略する。

【0005】このような患者等の検出装置において、発信装置51のバッテリー61に蓄電される直流電圧の量(蓄電量)には限界があり、発信装置51を装着した徘徊患者等が長時間の移動を必要とされる場合には、バッテリー61から発信器60への長時間の給電に起因して当該バッテリーの電位が低下し蓄電不足となる。これにより、移動先において徘徊患者等は、発信装置51の発信器60から現在位置等を発信装置52に発信することができない難点があった。また、この難点を解消し発信装置51の発信器60を長時間連続して動作させるためには、バッテリー61を着脱可能なバッテリーとし当該バッテリーを電位の低下とともに交換する、またはバッテリー61と商用交流電源とを適宜な手段で接続し、当該商用交流電源からの給電により蓄電不足分の電位(直流電圧)を充電することが必要不可欠であり、何れの場合においても多大な電力消費とともにコストが増大する難点があった。

【0006】本発明は上述の難点を解消するためになされたもので、徘徊患者等に装着され現在位置等を発信装置に発信する発信装置をなすバッテリーの電位低下を防止し、発信装置を長時間連続して動作させることができる患者等の検出装置を提供することを目的とする。

【0007】

【課題を解決するための手段】このような目的を達成するため、本発明による患者等の検出装置は、徘徊患者等に装着され現在位置等を発信装置に発信する発信器を有する発信装置を備え、発信装置は、発信器に電源を供給するバッテリーと、徘徊患者等の移動に伴う振動で発電される振動式発電器と、振動式発電器により供給される電流でバッテリーを充電する充電器とを備えたものである。

【0008】このような患者等の検出装置によれば、現在位置等を発信装置に発信する発信器を有する発信装置が装着された徘徊患者等が静止状態において、発信器の動作電源にはバッテリーに予め蓄電された直流電圧が用いられる。また、徘徊患者等の移動に伴う振動で振動式発電器から発電される電流(異方向電流)は、充電器を介した直流電圧としてバッテリーに充電されることから、徘徊患者等が移動状態において発信器に動作電源を給電するバッテリーの電位低下は防止され、発信装置を長時間連続して動作させることができる。

【0009】

【発明の形態の形態】以下、本発明による患者等の検出装置を適用した好ましい形態の一実施例について、図面を参照して説明する。

【0010】図1は本発明による患者等の検出装置の一実施例の構成を示すブロック図であり、徘徊患者等に装着される発信装置1と、病室の出入口等に設置され後述する発信装置1の発信器10から発信される徘徊患者等の現在位置等(以下、現在位置等と称す)を受信し適宜に信号処理する受信装置2とで構成されている。

【0011】発信装置1には、現在位置等を発信する発信器10と、発信器10の動作電源として予め直流電圧が蓄電されているバッテリー11と、徘徊患者等の移動に伴い振動し電磁誘導により電流(異方向電流)を発電する振動式発電器12と、振動式発電器12から供給される電流によりバッテリー11に直流電圧を充電する充電器13とが備えられている。

【0012】発信装置1の振動式発電器12には、長軸方向に極性を示すN極、S極(図示せず)が割り当てられた棒状の磁石12aと、筒状に巻回した内周側に磁石12aが配設されたコイル12bと、磁石12aを長軸方向に支持するコイルばね12c、12c'とが備えられている。尚、一端が磁石12aの長軸方向両端部に接続されたコイルばね12c、12c'の他端は、適宜な手段によりそれぞれ固定されている。

【0013】発信装置1の充電器13には、振動式発電器12をなすコイルばね12c、12c'の伸縮に伴う

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磁石12aの長軸方向、即ち移動方向A、Bの往復移動によりコイル12bに発生する異方向電流を全波整流するダイオードブリッジと、全波整流された電流を平滑化するコンデンサと、平滑化された電流をバッテリー11に充電するための直流電圧にAC/DC変換するDCコンバータとが備えられている（図示せず）。

【0014】尚、発信装置1の発信器10および受信装置2には、従来例と同様に特開平10-224240号公報等に開示された携帯型発信機、受信機が用いられているものとし、その構成および動作等の説明については省略する。

【0015】このように構成された患者等の検出装置において、以下、その動作について説明する。

【0016】発信装置1を装着した徘徊患者等が静止状態において、現在位置等を受信装置2に発信する発信器10の動作電源には、バッテリー11に予め蓄電された直流電圧が用いられる。

【0017】次に、発信装置1を装着した徘徊患者等が移動状態において、振動式発電器12をなすコイルばね12c、12c'は、徘徊患者等の移動に伴う振動量に比例して伸縮され、磁石12aは長軸方向、即ち移動方向A、Bに往復運動する。このとき、コイル12bには、磁石12aの往復運動により当該コイルを貫く磁束の変化を妨げる方向に起電力が誘導（電磁誘導）され異方向電流が発生する。尚、この異方向電流の当該電流値は、前述の磁石12aの長軸方向、即ち移動方向A、Bへの運動量のみならず、コイル12bの巻数値の相違により異なるものである。

【0018】振動式発電器12をなすコイル12bに発

\*生した異方向電流は、充電器13をなすダイオードブリッジにて全波整流され、コンデンサにて平滑化された電流としてDCコンバータにて直流電圧にAC/DC変換され、バッテリー11に充電される。この直流電圧は徘徊患者等が移動状態における発信器10の動作電源となることから、発信装置1を装着した徘徊患者等が長時間の移動を必要とされた場合にもバッテリー11の電位が低下せずに発信器10への給電状態を保持することができ、発信装置1を長時間連続して動作させることができる。

【0019】

【発明の効果】以上の説明から明らかなように、本発明の患者等の検出装置によれば、現在位置等を発信装置に発信する発信器を有する発信装置が装着された徘徊患者等が移動状態において、発信器に動作電源を給電するバッテリーの電位低下を防止することができることから、発信装置を長時間連続して動作させることができる。

【図面の簡単な説明】

【図1】本発明による患者等の検出装置の一実施例の構成を示すブロック図。

【図2】従来の患者等の検出装置の構成を示すブロック図。

【符号の説明】

1……発信装置

2……受信装置

10……発信器

11……バッテリー

12……振動式発電器

13……充電器

【図1】

